

Crop Profile for Carrots in Ohio

Daucus carota

Prepared: December, 2000

General Production Information

- Acres in Ohio: 1350
- Percent of US Acreage/Rank: 1%/11th
- Number of Growers: 39

Location of Production:

Counties with the most acres in carrots are located in the Northwest region of the state. The following counties are the top carrot producers in the state: Henry (614), Fulton (108), and Hardin (40). A majority of the carrots grown in Ohio are done so for the processing market.

Production Methods:

Carrots grow best in a deep porous soil with a pH between 6.0 and 6.8. The soil should be worked enough to remove any physical obstruction to root development. Carrots are seeded in rows 16-18 inches apart with 16 plants/row foot. This normally requires 2-3 lb of seed/A. An adequate supply of moisture is required for good germination. Fertilizers are applied to the soil before planting and again 4-6 weeks after planting as a sidedress or topdress. Soil can be hilled over the shoulders of the roots during the last cultivation to prevent greening. Carrots for processing are normally harvested when they are at least 1½ inches at the shoulders and the root 1 or more inches in diameter. Fresh market carrots are harvested earlier when the root reaches ¾ to 1¼ inches in diameter. For extended storage carrots must be topped.

Insect Pests

Aster Leafhopper:

The aster leafhopper is a pest of a wide variety of plants. It overwinters as eggs in Ohio but this population is augmented by adult leafhoppers that migrate north from breeding grounds in the south central US. The adult is light green-yellow with black dots or spots arranged in pairs on its head. Feeding damage from the aster leafhopper is of minimal importance. However, the leafhopper serves as a vector of the very serious disease, aster yellows which is caused by a mycoplasma-like organism. The disease causes reduced root size and therefore has a negative affect on yield, especially if the plants were

infected when they were young.

Aphids:

Many species of aphids have been found on carrots. They vary in color and size but have similar biologies, life cycles and general appearance. They overwinter as eggs, emerge in the late spring and then migrate to carrot plants. Colonies of aphids are usually found on the new growth or on the undersides of leaves. Heavy feeding from a large population of aphids causes foliage to yellow or wilt and new shoots and roots to be stunted.

Minor Insect Pests:

Carrot Weevil:

The carrot weevil adult is a dark brown beetle about ¼ inch long with a short snout. They overwinter as adults in the soil or in plant debris. They emerge in May and begin to deposit 2-4 eggs in small holes in petioles or the tops of roots. They seal the holes with a black exudate. The larvae hatch in 1-2 weeks and begin boring downward doing the most damage to the carrot roots. The larval feeding also makes the roots more susceptible to disease from soil borne pathogenic microorganisms.

Carrot Rust Fly:

The carrot rust fly overwinters as a larva on the roots of carrots left in the field. The adult flies emerge in the spring and are very mobile. They are shiny black with a pale yellow head, legs and wings. The females deposit tiny white eggs at the base of the carrot plant. Upon emerging from the eggs, the larvae tunnel into the carrot root to feed as they develop during the next 3-4 weeks. Even moderate damage from larval feeding renders the carrots unmarketable and provides entry points for pathogenic microorganisms. The larvae leave the roots to pupate in the soil. Second generation adults appear from early July to late August.

Chemical Insect Controls:

Carbaryl (Sevin)

Percent acres treated: 28%

Target pests: Leafhoppers

Average rate of most common formulations and frequency of application:

Carbaryl 4L – 1 pt/A, 3 times

Sevin 80S – 1 lb/A, 3 times

PHI: 10 days

Efficacy rating: Good

Esfenvalerate (Asana)

Percent Area Treated: 23%

Target pest: Leafhoppers and Carrot Weevils

Average rate of most common formulations and frequency of application:

Asana XL –7.7 oz/A, twice

PHI: 7 days

Efficacy rating: Good to Very Good

Cyfluthrin (Baythroid)

Percent Area Treated: 17%

Target pest: Leafhoppers and Carrot Weevils

Average rate of most common formulations and frequency of application:

Baythroid EC –2.2 oz/A, twice

PHI: 7 days

Efficacy rating: Good to Very

Diazinon

Percent Area Treated: 12%

Target pests: Aphids and Carrot Rust Fly

Average rate of most common formulations and frequency of application:

Diazinon 50 WP – 4 lb/A, once at planting for carrot rust fly maggots, 1 lb/A, 2-3 times for aphids

PHI: 14 days

Efficacy rating: Good

Cultural Controls:

Scouting to determine potential size of pest population is important for timing of control measures. Deep plowing or destroying plant debris is also helpful.

Diseases

Alternaria Leaf Spot:

Alternaria leaf spot is a fungal disease caused by *Alternaria dauci*. It overwinters in diseased debris in the soil and it may be spread on or in contaminated seed or by the wind. The disease usually start on older leaf margins causing dark spots with yellow borders to develop. Spots on the leaf stems will elongate and kill the entire leaf. Infection most commonly occurs during the cooler portions of the growing season when the leaf surface is wet.

Asters Yellows:

Asters yellows is caused by a mycoplasma that overwinters in many perennial weeds and is transmitted

to the plant by leafhoppers. Infected plants have yellowish dwarfed leaves that are usually arranged in a tight rosette. Older leaves often develop reddish margins and eventually break off from the rest of the plant. The disease also reduces the size and quality of the roots. The carrots are malformed and develop many hairy secondary roots. Infected roots are tough, off-flavor and lighter in color. There is no control for aster yellows once a plant becomes infected. Therefore, growers must prevent the disease by controlling leafhoppers.

Cercospora Leaf Spot:

Cercospora leaf spot is caused by the fungus *Cercospora carotae*. This disease affects all foliar parts of the plant but not the roots. Infection usually first occurs on young leaves in the margins. Lesions are small and round with a tan to black center and an indefinite yellow halo. Many spots on one leaf can cause withering and death. Infection of the leaf stalks results in pale centered, elliptical tan lesions. Disease development is favored under warm and humid weather.

Chemical Disease Controls:

Chlorothalonil (Bravo)

Percent acres treated: 32%

Target diseases and timing: Alternaria Leaf Spot and Cercospora Leaf Spot

Average rate of most common formulation and frequency of application:

Bravo 720 - 1.5 pt/A, 5 times

PHI: 10 days

Efficacy rating: Good to Very Good

Copper Hydroxide (Kocide)

Percent acres treated: 15%

Target diseases and timing: Alternaria Leaf Spot and Cercospora Leaf Spot

Average rate of most common formulation and frequency of application:

Kocide 4L – 1.5 pt/A, 5-6 times

PHI: 10 days

Efficacy rating: Good

Rational for use:

Cultural Controls:

Plant resistant varieties and Rotate crops.

Weeds

Broadleaves and grasses

Chemical Controls:(2,4)

Trifluralin (Treflan)

Percent acres treated: 45%

Target weeds: Annual grasses and broadleaf

Average rate of most common formulation and frequency of application:

Treflan 4EC – 1 pt/A, once

PHI: 120 days

Efficacy rating: Good to Very Good

Linuron (Lorox)

Percent acres treated: 38%

Target weeds: Annual broadleaf and some grasses

Average rate of most common formulation and frequency of application:

Lorox 50 WP – 1.5 lb/A, 1-2 times

PHI: 90 days

Efficacy rating: Good to Very Good

Metribuzin (Sencor)

Percent acres treated: 25%

Target weeds: Emerged annual broadleaf and certain grasses

Average rate of most common formulation and frequency of application:

Sencor DF – ½ lb/A, once

PHI: 90 days

Efficacy rating: Very Good

Fluazifop-P-butyl (Fusilade)

Percent acres treated: 22%

Target weeds: Grasses

Average rate of most common formulation and frequency of application:

Fusilade DX - 1 pt/A, once

PHI: 90 days

Efficacy rating: Very Good

Sethoxydim (Poast)

Percent acres treated: 9%

Target weeds: Actively growing emerged grasses

Average rate of most common formulation and frequency of application:

Poast 1.5 EC – 1 pt/A, once when grass is actively growing

PHI: 90 days

Efficacy rating: Very Good

Cultural Controls:(3) Cultivation.

Contacts

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Compiled by: M.F. Huelsman, December, 2000.